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Quarkonium production in proton-proton collisions with ALICE at the LHC

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Beyond the study of the hot and dense matter created in heavy-ion collisions, the ALICE experiment at the LHC has a unique potential to study proton-proton collisions with the goal to probe the Quantum Chromodynamics (QCD). ALICE is particularly well suited for the reconstruction of low transverse momentum particles and in this way to measure the bulk of the production cross section of hadrons. In particular, quarkonia are very interesting because their production mechanisms are governed by both perturbative and non-perturbative QCD. This is why quarkonia represent a unique QCD laboratory. Several theoretical approaches (CEM, CSM, NRQCD) fail in describing simultaneously the differential cross section and polarization state. In ALICE, quarkonia are reconstructed via their dilepton decay channel in a large rapidity range and down to zero transverse momentum. An overview of quarkonium production results from ALICE will be presented and compared to other results from the LHC and from lower energy experiments. Finally, a critical comparison to theoretical predictions will be discussed.

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